STIC Search Report
EIC 2100

USPTO

STIC Database Tracking Number: 195546

TO:	From:
Merilyn Nguyen **Location: RND 3c19** **Art Unit: 2163** **Tuesday, July 25, 2006** **Case Serial Number: 10/669749**	**Byron T. Mims** **Location: EIC 2100** **RND-4B19** **Phone: 272-3528** **byron.mims@uspto.gov**

Search Notes

Merilyn

Enclosed are art findings that may be of interest. I took the liberty of flagging as well as highlighting some that I felt would be of direct relevance. However, you might want to look at some of the others in the event that your vantage point may provide you with the ability to see great pertinence in some of the others. Let me know if there is anything in particular that you would like for me to pursue further.

Byron

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Search and Information Resources Administration

RECEIVED
JUL 13 2006
BY:.....

Access DB# 195546

SEARCH REQUEST FORM

Scientific and Technical Information Center

64

Requester's Full Name: MERILYN NGUYEN Examiner #: 79389 Date: 07-13-2006
Art Unit: 2163 Phone Number ~~30~~ 571-272-4026 Serial Number: 10/669,749
Mail Box and Bldg/Room Location: RAN 3C19 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Query transformation for union all view join queries using join predic

Inventors (please provide full names): Yao-Ching S. Chen, Ding-Wei L. Chieh, Huong T. Trar Yumi K. Tsuji, and Guogen Zhang

Earliest Priority Filing Date: 09/24/2003

***For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.**

Method of optimizing a query in a computer system by combining join predicates from a query with local predicates from each branch of one or more UNION ALL views and generat the join except when the combined predicates are always FALSE and the join generates an empty result. Which are indicated by analization process.

→ Advantage : to eliminates the need to evaluate the empty joins at run time.

★ Predicates are always FALSE : means predicates are contradictory

prior art : Cheng 5,963,933
Tate 5,822,750

****

STAFF USE ONLY Type of Search Vendors and cost where applicable

STIC Scientific & Technical Information Center

STIC Search Results Feedback Form

EIC 2100

Questions about the scope or the results of the search? Contact ***the EIC searcher or contact:***

Alyson Dill, EIC 2100 Team Leader
272-3527, RND 4B28

Voluntary Results Feedback Form

- *I am an examiner in Workgroup:* ☐ *Example: 2133*
- *Relevant prior art **found**, search results used as follows:*
  - ☐ 102 rejection
  - ☐ 103 rejection
  - ☐ Cited as being of interest.
  - ☐ Helped examiner better understand the invention.
  - ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
  (Journal articles, conference proceedings, new product announcements etc.)

- *Relevant prior art **not found:***
  - ☐ Results verified the lack of relevant prior art (helped determine patentability).
  - ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to STIC/EIC2100 RND, 4B28

sira Search and Information Resources Administration

```
Set     Items   Description
S1       9389   AU=(CHEN Y? OR CHEN, Y?)
S2          2   AU=(CHIEH D? OR CHIEH, D?)
S3        572   AU=(TRAN H? OR TRAN, H?)
S4       4119   AU=(TSUJI Y? OR TSUJI, Y?)
S5       2725   AU=(ZHANG G? OR ZHANG, G?)
S6          1   (YAOCHING OR YAO()CHING)(2N)CHEN OR (DINGWEI OR DING()WEI)-
              (2N)CHIEH OR TRAN(2N)HUONG OR YUMI(2N)TSUJI OR GUOGEN(2N)ZHANG
S7         63   JOIN()PREDICAT?
S8         59   UNION()ALL()VIEW??? ? OR UNIONALLVIEW??? ? OR UNIONALL()VI-
              EW??? ? OR UNION()ALL? ? OR UNIONALL?
S9         18   LOCAL()PREDICAT?
S10      1259   QUER??? ?(10N)OPTIMIZ?
S11   1484013   IC=G06F?
S12   1038750   MC=T01?
S13         1   S1 AND S2 AND S3 AND S4 AND S5
S14         2   S13 OR S6
S15         9   S1:S6 AND S7:S10
S16        10   S14:S15
S17        10   IDPAT (sorted in duplicate/non-duplicate order)
File 347:JAPIO Dec 1976-2005/Dec(Updated 060404)
         (c) 2006 JPO & JAPIO
File 348:EUROPEAN PATENTS 1978-2006/ 200629
         (c) 2006 European Patent Office
File 349:PCT FULLTEXT 1979-2006/UB=20060720,UT=20060713
         (c) 2006 WIPO/Univentio
File 350:Derwent WPIX 1963-2006/UD=200646
         (c) 2006 The Thomson Corporation
```

Your Appl.

17/3,K/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

0014905071 - Drawing available
WPI ACC NO: 2005-252849/200526
XRPX Acc No: N2005-208131
Query optimization **method in personal computer, involves analyzing combined predicates and not joining** join predicates **with** local predicates **when analyzed combined predicates lead to empty result**
Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)
Inventor: **CHEN Y S ; CHIEH D L ; TRAN H T ; TSUJI Y K ; ZHANG G**
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update
US 20050065926	A1	20050324	US 2003669749	A	20030924	200526 B

Priority Applications (no., kind, date): US 2003669749 A 20030924

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 20050065926	A1	EN	14	6	

Query optimization **method in personal computer, involves analyzing combined predicates and not joining** join predicates **with** local predicates **when analyzed combined predicates lead to empty result**
Inventor: **CHEN Y S** ...

... **CHIEH D L** ...

... **TRAN H T** ...

... **TSUJI Y K** ...

... **ZHANG G**

Alerting Abstract ...NOVELTY - The **join predicates** from a query are combined with **local predicates** from **UNION ALL views** referred by a query and the combined predicates are analyzed. When the combined predicates lead to an empty result, the joined predicates are not joined with **local predicates** . ... **query optimizing** device; andarticle of manufacture comprising computer readable medium **storing query** optimization program...

...USE - **For optimizing** query in computer systems such as personal computer, mainframe computer and minicomputer for retrieving data...
...ADVANTAGE - **The** query **is** optimized efficiently since the need to evaluate the empty join during runtime is eliminated

Original Publication Data by Authority

Original Titles:
Query transformation for **union all view** join queries using **join predicates** for pruning and distribution
Inventor name & address:
Chen, Yao-Ching S ...

... **Chieh, Ding-Wei L** ...

... **Tran, Huong T** ...

... **Tsuji, Yumi K** ...

... **Zhang, Guogen**

Original Abstracts:

A method, apparatus, and article of manufacture for **optimizing** a **query** in a computer system, wherein the **query** is performed by the computer system to retrieve data from a database stored on the computer system. The **optimization** includes: (a) combining **join predicates** from a **query** with **local predicates** from each branch of one or more **UNION ALL views** referenced by the query; (b) analyzing the combined predicates; and (c) not generating the join...

Claims:

What is claimed is: b 1 /b . A method of **optimizing** a **query** in a computer system, the **query** being performed by the computer system to retrieve data from a database stored on the computer system, the method comprising:(a) combining **join predicates** from a query with **local predicates** from each branch of one or more **UNION ALL views** referenced by the query;(b) analyzing the combined predicates; and(c) not generating the join...

Your Assignee & some INV.

17/3,K/3 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

0014803780 - Drawing available
WPI ACC NO: 2005-151466/200516
XRPX Acc No: N2005-127790
Query optimization **method in computer system, involves maintaining group by clause with grouping sets and rollup/cube operations, in original form after query rewrite, during query compilation and translating maintained clause**
Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)
Inventor: **CHEN Y S** ; HU J; LIN F; WANG Y; YUKI G M; **ZHANG G**
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update
US 20050027690	A1	20050203	US 2003629459	A	20030729	200516 B

Priority Applications (no., kind, date): US 2003629459 A 20030729

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 20050027690	A1	EN	17	6	

Query optimization **method in computer system, involves maintaining group by clause with grouping sets and rollup/cube...**
Inventor: **CHEN Y S** ...

... **ZHANG G**

Alerting Abstract ... **query optimizing** device; and article of manufacture comprising computer readable medium storing **query optimization** program...

...USE - For **optimizing queries** such as structured **query** language (SQL) **query** in relational database management system, using computer systems such as mainframe computer, minicomputer and personal...

...ADVANTAGE - The **query** is **optimized** efficiently within minimum time by reducing the generation number of workfiles during optimization

Original Publication Data by Authority

Inventor name & address:
Zhang, Guogen ...

... **Chen, Yao-Ching S**
Original Abstracts:
A method, apparatus, and article of manufacture for **optimizing** a **query** in a computer system. During compilation of the **query** , a GROUP BY clause with one or more GROUPING SETS, ROLLUP or CUBE operations is...

...an input to a grouping set on a next one of the levels. Finally, a **UNION ALL** operation is performed on the grouping sets.
Claims:
What is claimed is: b 1 /b . A method of **optimizing** a **query** in a computer system, the **query** being performed by the computer system to retrieve data from a database stored on the...

Your Assignee & 1_INV

17/3,K/4 **(Item 4 from file: 350)**
DIALOG(R)File 350:Derwent WPIX

0014328926 - Drawing available
WPI ACC NO: 2004-516682/200449
XRPX Acc No: N2004-409424
Query optimizing **method in computer system, involves rewriting** query **based on matched grouping of materialized view with grouping of query performed by computer system, using column equivalence and functional dependency**
Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)
Inventor: LI R; LIU L H; WANG Y; **ZHANG G**
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update
US 20040122814	A1	20040624	US 2002322977	A	20021218	200449 B

Priority Applications (no., kind, date): US 2002322977 A 20021218

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 20040122814	A1	EN	19	4	

Query optimizing **method in computer system, involves rewriting** query **based on matched grouping of materialized view with grouping of query performed by computer system**...
...Inventor: **ZHANG G**

Alerting Abstract ... **query optimizing** apparatus; and article of manufacture comprising computer readable medium storing **query optimizing** program...

...USE - For **optimizing query** in computer system e.g. personal computer (PC), mainframe and minicomputer...

...ADVANTAGE - Efficiently **optimizes** the **query** in computer system, by simple technique

Original Publication Data by Authority

Inventor name & address:
Zhang, Guogen ...
Original Abstracts:
A method, apparatus, and article of manufacture for **optimizing** a **query** in a computer system, wherein the **query** is performed by the computer system to retrieve data from a database stored on the...
Claims:
What is claimed is: b 1 /b . A method of **optimizing** a **query** in a computer system, the **query** being performed by the computer system to retrieve data from a database stored on the...

* A&T

17/3,K/5 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX

0013351910 - Drawing available
WPI ACC NO: 2003-439775/200341
XRPX Acc No: N2003-350964
Database query processing method for relational database management system, involves applying set operator on two intermediate result tables obtained by performing query operation on each input table separately
Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)
Inventor: **CHEN Y C S** ; STEPHEN CHEN Y C; **TSUJI Y K** ; WANG Y; **ZHANG G**
Patent Family (2 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	
US 20030055814	A1	20030320	US 2001896453	A	20010629	200341	B
US 6792420	B2	20040914	US 2001896453	A	20010629	200460	E

Priority Applications (no., kind, date): US 2001896453 A 20010629

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 20030055814	A1	EN	15	6	

Inventor: **CHEN Y C S** ...
... **TSUJI Y K** ...

... **ZHANG G**

Original Publication Data by Authority

Original Titles:
Method, system, and program for **optimizing** the processing of **queries** involving set operators...

...Method, system, and program for **optimizing** the processing of **queries** involving set operators
Inventor name & address:
Chen, Yao Ching Stephen ...

... **Tsuji, Yumi Kimura** ...

... **Zhang, Guogen** ...

... **Tsuji, Yumi Kimura** ...
... **Zhang, Guogen**

*A&I

17/3,K/6 (Item 6 from file: 350)
DIALOG(R)File 350:Derwent WPIX

0012823209 - Drawing available
WPI ACC NO: 2002-680899/200273
XRPX Acc No: N2002-537390
Query optimization **method for relational database management system, involves dividing overall access path selection into smaller access path selections that are processed separately by join enumerator**
Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)
Inventor: **CHEN Y S** ; LIN F; MUKAI J; TIE H; WANG Y
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update
US 6421663	B1	20020716	US 1999332600	A	19990614	200273 B

Priority Applications (no., kind, date): US 1999332600 A 19990614

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 6421663	B1	EN	14	8	

Query optimization **method for relational database management system, involves dividing overall access path selection into smaller access...**
Inventor: **CHEN Y S** ...

Alerting Abstract ... **Query optimization** apparatus; and Article of manufacture comprising recorded medium storing **query optimization** program...

...USE - For **optimizing query** for relational database management system of computer system...

...ADVANTAGE - **Optimizes** joined table expressions and complex join operations of the **query** effectively using access path selections

Original Publication Data by Authority

Inventor name & address:
Chen, Yao-Ching Stephen ...
Original Abstracts:
...article of manufacture for analyzing a query and extending an access path selection for the **query** , in order to **optimize** joined table expressions and complex join operations in the **query** . The extension of the access path selection occurs in two phases: (1) an access path...

...and complex join operators, wherein the join enumerator can be continuously enhanced as more powerful **query optimization** techniques become available.
Claims:
A method of **optimizing** a **query** in a relational database management system, comprising: (a) dividing the query into separate portions in...

* A&I

17/3,K/7 (Item 7 from file: 350)
DIALOG(R)File 350:Derwent WPIX

0012656898 - Drawing available
WPI ACC NO: 2002-506609/
XRPX Acc No: N2002-400785
Query optimization **method for relational database management system, involves transforming joined table expressions by simplifying joins, when non-null predicate references null-supplying side of joined table expression**
Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)
Inventor: **CHEN Y S** ; LIN F; MUKAI J; TIE H; WANG Y
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update
US 6385603	B1	20020507	US 1999332544	A	19990614	200254 B

Priority Applications (no., kind, date): US 1999332544 A 19990614

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 6385603	B1	EN	13	4	

Query optimization **method for relational database management system, involves transforming joined table expressions by simplifying joins, when** ...
Inventor: **CHEN Y S** ...

Alerting Abstract DESCRIPTION - An INDEPENDENT CLAIM is included for **query optimization** apparatus...

...ADVANTAGE - **Optimizes** joined table expressions and complex join operations by **query** transformations...

...DESCRIPTION OF DRAWINGS - The figure shows a flowchart explaining the SQL **queries optimizing** method.

Original Publication Data by Authority

Original Titles:
Joined table expression **optimization** by **query** transformation.
Inventor name & address:
Chen, Yao-Ching Stephen ...
Original Abstracts:
A **query optimizer** analyzes a **query** and triggers a sequence of transformations to achieve optimal performance for joined table expressions. The...
Claims:
A method of **optimizing** a **query** in a relational database management system, comprising:(a) analyzing the query to determine whether it...

* A&I

17/3,K/10 (Item 10 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01751357
ANNOTATED AUTOMATON ENCODING OF XML SCHEMA FOR HIGH PERFORMANCE SCHEMA VALIDATION
KODIERUNG VON XML-SCHEMATA IN ANNOTIERTE AUTOMATEN FUR HOCHLEISTUNGSSCHEMAVALIDIERUNG
CODAGE DE SCHEMA XML PAR AUTOMATE AVEC ANNOTATIONS PERMETTANT UNE VALIDATION DE SCHEMA HAUTEMENT PERFORMANTE
PATENT ASSIGNEE:
International Business Machines Corporation, (200120), New Orchard Road, Armonk, N.Y. 10504, (US), (Applicant designated States: all)
INVENTOR:
FUH, You-Chin, 1140 Queen Anne Drive, San Jose, CA 95129, (US)
WANG, Ning, 5623 Verano Place, Irvine, CA 92612, (US)
WANG, Yun, 20758 Maureen Way, Saratoga, CA 95070, (US)
ZHANG , Guogen , 5614 Calmor Ave No 4, San Jose, CA 95123, (US)
LEGAL REPRESENTATIVE:
Williams, Julian David (75461), IBM United Kingdom Limited Intellectual Property Department Mail Point 110 Hursley Park Winchester,, Hampshire SO21 2JN, (GB)
PATENT (CC, No, Kind, Date): EP 1573519 A2 050914 (Basic)
WO 2004036417 040429
APPLICATION (CC, No, Date): EP 2003758311 031011; WO 2003GB4434 031011
PRIORITY (CC, No, Date): US 418673 P 021015; US 418658 030416
DESIGNATED STATES: AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR; HU; IE; IT; LI; LU; MC; NL; PT; RO; SE; SI; SK; TR
EXTENDED DESIGNATED STATES: AL; LT; LV; MK
INTERNATIONAL PATENT CLASS (V7): G06F-009/40
NOTE:
No A-document published by EPO
LANGUAGE (Publication,Procedural,Application): English; English; English

INVENTOR:
... US)
ZHANG , Guogen ,

```
Set     Items   Description
S1         36   JOIN()PREDICAT?
S2         10   UNION()ALL()VIEW??? ? OR UNION()ALL
S3          1   S2(10N)(LOCAL()PREDICAT?)
S4          1   S1 AND S2
S5          1   S3:S4
S6         10   S2:S5
File 350:Derwent WPIX 1963-2006/UD=200646
         (c) 2006 The Thomson Corporation
File 347:JAPIO Dec 1976-2005/Dec(Updated 060404)
         (c) 2006 JPO & JAPIO
```

Your Appl. & Inv

6/3,K/6 (Item 6 from file: 350)
DIALOG(R)File 350:Derwent WPIX

0014905071 - Drawing available
WPI ACC NO: 2005-252849/200526
XRPX Acc No: N2005-208131
Query optimization method in personal computer, involves analyzing combined predicates and not joining join predicates **with local predicates when analyzed combined predicates lead to empty result**
Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)
Inventor: CHEN Y S; CHIEH D L; TRAN H T; TSUJI Y K; ZHANG G
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update
US 20050065926	A1	20050324	US 2003669749	A	20030924	200526 B

Priority Applications (no., kind, date): US 2003669749 A 20030924

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 20050065926	A1	EN	14	6	

Query optimization method in personal computer, involves analyzing combined predicates and not joining join predicates **with local predicates when analyzed combined predicates lead to empty result**
...NOVELTY - The **join predicates** from a query are combined with **local predicates** from **UNION ALL views** referred by a query and the combined predicates are analyzed. When the combined predicates lead...

Original Publication Data by Authority

Original Titles:
Query transformation for **union all view** join queries using **join predicates** for pruning and distribution
Original Abstracts:
...retrieve data from a database stored on the computer system. The optimization includes: (a) combining **join predicates** from a query with **local predicates** from each branch of one or more **UNION ALL views** referenced by the query; (b) analyzing the combined predicates; and (c) not generating the join...
Claims:
...retrieve data from a database stored on the computer system, the method comprising:(a) combining **join predicates** from a query with **local predicates** from each branch of one or more **UNION ALL views** referenced by the query;(b) analyzing the combined predicates; and(c) not generating the join...

6/3,K/9 (Item 9 from file: 350)
DIALOG(R)File 350:Derwent WPIX

0013214759 - Drawing available
WPI ACC NO: 2003-299328/
XRPX Acc No: N2003-238107
Query processing method for ad-hoc analysis and data mining applications, involves inserting child group by operators to union nodes of query tree so as to summarize separate database tables in parallel
Patent Assignee: SYBASE INC (SYBA-N)
Inventor: KIRK S A; LI X; MACNICOL R D
Patent Family (2 patents, 1 countries)

Patent			Application			
Number	Kind	Date	Number	Kind	Date	Update
US 20020198872	A1	20021226	US 2001300234	P	20010621	200329 B
			US 200268253	A	20020204	
US 6691101	B2	20040210	US 200268253	A	20020204	200413 E

Priority Applications (no., kind, date): US 2001300234 P 20010621; US 200268253 A 20020204

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 20020198872	A1	EN	30	6	Related to Provisional US 2001300234

Original Publication Data by Authority

Original Titles:
Database system providing optimization of group by operator over a **union all**
...

...Database system providing optimization of group by operator over a **union all**

```
Set     Items   Description
S1         27   JOIN()PREDICAT?
S2         49   UNION()ALL()VIEW??? ? OR UNION()ALL
S3          6   S1(5N)(AFFILIAT? OR ASSOCIAT? OR BOUND? OR CONNECT? OR LIN-
              K? OR COOPERAT? OR CORRELAT? OR RELAT?)
S4         27   S1(5N)(COMBIN? OR CONJUNCT? OR PARTNER? OR COUPL? OR JOIN?
              OR CORRESPOND? OR SPONSOR? OR ATTACH?)
S5          0   S3:S4(100N)S2
S6          0   S1(100N)S2
S7         35   S2 NOT (AD>2003 OR AD=2004:2006)
S8          3   S7 AND (QUER??? ?()OPTIMIZ?)
S9         32   S7 NOT S8
File 348:EUROPEAN PATENTS 1978-2006/ 200629
         (c) 2006 European Patent Office
File 349:PCT FULLTEXT 1979-2006/UB=20060720,UT=20060713
         (c) 2006 WIPO/Univentio
```

8/3,K/1 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01360830
Relation interval tree
Baum zum Indizieren von Zeitabstanden fur relationale Datenbanken
Arbre d'indexation d'intervalles dans des bases de donnees relationnelles
PATENT ASSIGNEE:
Seidl, Thomas, Dr., (3038810), Jagerstrasse 11, 82008 Unterhaching, (DE), (Applicant designated States: all)
Potke, Marco, (3038840), Herzogstandstrasse 1, 81541 Munchen, (DE), (Applicant designated States: all)
Kriegel, Hans-Peter, Prof.Dr., (3038850), Nurnberger Strasse 21, 86399 Bobingen, (DE), (Applicant designated States: all)
INVENTOR:
Seidl, Thomas, Dr., Jagerstrasse 11, 82008 Unterhaching, (DE)
Potke, Marco, Herzogstandstrasse 1, 81541 Munchen, (DE)
Kriegel, Hans-Peter, Prof.Dr., Nurnberger Strasse 21, 86399 Bobingen, (DE)
PATENT (CC, No, Kind, Date): EP 1160682 A1 011205 (Basic)
APPLICATION (CC, No, Date): EP 2000112031 000602;
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS (V7): G06F-017/30
ABSTRACT WORD COUNT: 184
NOTE:
Figure number on first page: NONE

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200149	329
SPEC A	(English)	200149	8920
Total word count - document A			9249
Total word count - document B			0
Total word count - documents A + B			9249

...SPECIFICATION integrating the RI-Tree with the declarative SQL level as well as with the relational **query optimizer** .
Technically, the RI-tree manages intervals by two relational indexes. For storing n intervals, O...split the complex OR-query into a set of three simpler queries connected by a **UNION ALL** operator. The subqueries concerning leftNodes and rightNodes are efficiently supported by the respective indexes upperIndex...

8/3,K/2 **(Item 1 from file: 349)**

00418777 **Image available**

METHOD AND SYSTEM FOR USING MATERIALIZED VIEWS TO EVALUATE QUERIES INVOLVING AGGREGATION

PROCEDE ET SYSTEME UTILISANT DES VUES MATERIALISEES POUR EVALUER DES REQUETES FAISANT INTERVENIR UNE LOGIQUE D'AGREGATION

Patent Applicant/Assignee:
AT & T CORP,
Inventor(s):
DAR Shaul,
JAGADISH Hosagrahar Visvesvaraya,
LEVY Alon Yitzchak,
SRIVASTAVA Divesh,

Patent and Priority Information (Country, Number, Date):
Patent: WO 9809238 A1 19980305
Application: WO 97US14660 19970819 (PCT/WO US9714660)
Priority Application: US 9624635 19960827; US 97895024 19970716
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
CA JP AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE
Publication Language: English
Fulltext Word Count: 10757

Fulltext Availability:
Detailed Description

Detailed Description

... 1994; C. M. Chen and N. Roussopoulos, "The implementation and performance evaluation of the ADMS **query optimizer** : Integrating query result caching and matching", In Proc.

EDBT, 1994; S. Chaudhuri, R. Krishnamurthy, S...and aggregation, in the presence of multiset tables. In addition to its obvious potential in **query optimization** , this problem is important in many applications, such as data warehousing, very large transaction recording...1990 would have to access the Calls table, and the rewritten query Q;.

involves a **UNION ALL** .

Q;: SELECT Year, Plan-Name, SUM(Earnings)
FROM VI Calling Plans
WHERE VI Plan.1d...
...Plan.Id
AND Year.:@1995
GROUPBY Year, Plan-Name
HAVING SUM(Earnings) > 1, 000, 000
UNION ALL
SELECT Year, Plan-Name, SUM(Charge)
FROM Calls, Calling
Plans
WHERE Calls.Plan-Id = Calling...Q can be a single-block query, or a multi-block query that is a **UNION ALL** of single-block queries. For view V to be usable in answering query Q such...

...either be single-block queries (described below) or union multi-block queries that are the **UNION ALL** (i.e., additive multiset union) of single-block queries. A view is defined by a...query, whereas rewriting Q; in the same example is a multiblock query that is a **UNION ALL** of single-block queries.

Rewriting of a Query
A query Q is a rewriting of...

...V is usable in evaluating a given query Q - the rewritten query can be the **UNION ALL** of Q itself and a single-block query in which V occurs in the FROM...be a single-block query, but
can be a multi-block query that is a **UNION ALL** of single-block queries,
additional usage of views in evaluating queries are possible.

The conditions...that satisfied condition C 1 302 query Q can always be refon-nulated as a **UNION ALL** of 2 single-block queries Qa and Qb, that differ from Q (and from each...

...whether view V can be used to evaluate Qa. The reformulation of Q as the **UNION ALL** Of Qa and Qb, however, does not always preserve the semantics of Q. To preserve...

...the multi-block query Q that is the rewriting of Q using V is the **UNION ALL** of Q' a and Qb. Else Q is the same as Q',.

Theorem 3.2...

8/3,K/3 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00303256 **Image available**
IMPROVED METHOD AND APPARATUS FOR DATA ACCESS IN MULTIPROCESSOR DIGITAL DATA PROCESSING SYSTEMS
PROCEDE ET APPAREIL AMELIORES D'ACCES AUX DONNEES DANS DES SYSTEMES DE DONNEES NUMERIQUES A PROCESSEURS MULTIPLES
Patent Applicant/Assignee:
KENDALL SQUARE RESEARCH CORPORATION,
Inventor(s):
REINER David,
MILLER Jeffrey M,
WHEAT David C,
Patent and Priority Information (Country, Number, Date):
Patent: WO 9521407 A2 19950810
Application: WO 95US1356 19950131 (PCT/WO US9501356)
Priority Application: US 94189497 19940131
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
CA JP AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE
Publication Language: English
Fulltext Word Count: 60951
Fulltext Availability:
Detailed Description
Claims

Detailed Description
... which is selected by the decomposer 74A based on the access strategy chosen by the **query optimizer** portion 76B of the DBMS 76.

Those skilled in the art will appreciate that information...produced.

OBJECT SEARCH
OPERATION OPTIONS NAME ID PARENT ID COLUMNS
. . .. ----
---------- .....

SELECT 0
STATEMENT
KSR PARALLEL **UNION ALL** EMP I 0 20
EXECUTION
TABLE ACCESS FULL EMP ...partitions,
(2) Submitting subqueries to the DBMS and executing them in parallel, (3) Avoiding excessive **query optimization** overhead for the multiple subqueries, (4) Producing correctly-optimized access plans for the multiple subqueries...

...should be consistent with ORACLE's version 7.0 language for passing directives to the **query optimizer** .

It may also be possible for us to automate the choice of partitioning table. This...but not exhaustive set of queries.

We assume the use of the ORACLE 7.0 **query optimizer** , but may not have

captured its exact behavior. Many of the same results could be...

Claim
... usage. table cardinalities, predicate selectivity, and join order and method must be obtained from the **query optimizer** to make decisions about decomposition strategy, such as choice of a partitioning table. Semantic information...the parsed query, or obtaining a parse tree with already-bound semantic information from the **query optimizer** , and translating that to our standardized Aform). It also permits us to expand our repertoire...

...gatheringlanalyzing phase of query decomposition, and are the mechanism used for gathering information from the **query optimizer** and the data dictionary. This suggests that gatheringlanalyzing rules can be divided into two classes...

...of the query. Probing queries also fall into two groups: those which gather information on **query optimizer** strategy and associated cardinality and selectivity estimates; and those which gather semantic information about objects...that query. This entire category of queries could be replaced by a call to the **query optimizer** to return a parse tree for the original query, to which the necessary semantic information ...
...in some cases to establish cross-references between the semantically-augmented parse tree and the **query optimizer** plan. These could be needed, for example, to determine which index name in the optimizer...query. In the simplest case, a single combining function is used to produce the logical " **union all** " of the separate parallel streams. More complex cases can involve multiple functions or queries working...where other pnode types can easily enough place results directly in the caller's buffer.
Union - All
A **union - all** pnode returns, in arbitrary sequence, the result rows of all of its children. It has...

...sorted in the same collating sequence, into a continuous run of that sequence. Like the **union - all** pnode, it pulls all of its children asynchronously, but it must wait for all children...diagrams, a I 0 degree of parallelism of 4 is assumed in all examples.
Basic **Union - All** of Parallel Subcursors
The simplest pnode tree type shown in Figure 36 - I can be...possible for Q6 and Q 1 2).
Each time the root requests a row, the **union - all** pnode returns the first
available row from any of its children, until all children have...
...2 can be used for queries which
could otherwise have been handled by a basic **union - all** tree, but for the addition of an order-by clause (e.g. Q7). The subcursor...

...value. The aggregate pnode returns a single row of final aggregate values when its child **union - all** pnode returns EOD, which happens when all of the latter's children have returned EOD...row per distinct 1 5 set of group column values per subcursor). Straightforward cases where **union - all** suffices as a combining fimction would be obvious candidates for a combining functions approach. For pnode could masquerade as the root pnode in the basic **union - all** tree (Figure 36 - 1). This tree structure could handle a wide variety of cases, depending...

...be I 0 no point in using a combining query for cases that the basic **union - all** tree could have handled without one). For example, the combining query could contain an ORDER...Operator
A SETOP represents a UNION, INTERSECT, or MINUS set operator.
Attributes:
Operator type (UNION, **UNION ALL** , INTERSECT, or MINUS). Pointers to two operands (QRYs or other SETOPs).
QRY: Query
A QRY...Pointer to psubqries. (NOTE: We doubt we need this here, because the
multiplexing pnode types, **UNION - ALL** and MERGE, contain arrays of pointers to psubqries. But if there's any need to...boundaries in a stream of rows already sorted on GROUP BY columns. 136
Multiplexing Pnodes - **Union - All** and Merge
The **union - all** and merge pnodes are each able to coordinate the retrieval of rows from an arbitrary number of psubqries. They differ in that the **union - all** pnode returns rows in arbitrary order, as they become available from different psubqries, while the...room for the qd row. 2.
Contents of QD row:
Operation KSR PARALLEL EXECUTION Options **UNION ALL** , MERGE, or AGGREGATION ID 1 Object name: name of partitioning table object owner: owner of...

```
Set     Items   Description
S1         91   JOIN()PREDICAT?
S2        143   UNION()ALL()VIEW??? ? OR UNION()ALL? ? OR UNIONALL()VIEW???
               ?
S3          0   S2(10N)(LOCAL()PREDICAT?)
S4          0   S1 AND S2
S5          1   S1 AND LOCAL()PREDICAT?
S6         25   S1:S2 AND QUER??? ?(5N)OPTIMIZ?
S7         23   S6 NOT (PY>2003 OR PY=2004:2006)
S8         12   RD  (unique items)
S9      85696   AU=(CHEN Y? OR CHEN, Y?)
S10         0   AU=(CHIEH D? OR CHIEH, D?)
S11      2659   AU=(TRAN H? OR TRAN, H?)
S12      6724   AU=(TSUJI Y? OR TSUJI, Y?)
S13     22256   AU=(ZHANG G? OR ZHANG, G?)
S14         0   S9 AND S11 AND S12 AND S13
S15         0   S9:S13 AND S1:S2
S16        25   S9:S13 AND QUER??? ?(5N)OPTIMIZ?
S17         0   S16 AND S1:S2
S18        24   S16 NOT (PY>2003 OR PY=2004:2006)
S19        16   RD  (unique items)
File   2:INSPEC 1898-2006/Jul W3
         (c) 2006 Institution of Electrical Engineers
File   6:NTIS 1964-2006/Jul W3
         (c) 2006 NTIS, Intl Cpyrght All Rights Res
File   8:Ei Compendex(R) 1970-2006/Jul W3
         (c) 2006 Elsevier Eng.  Info. Inc.
File  34:SciSearch(R) Cited Ref Sci 1990-2006/Jul W3
         (c) 2006 The Thomson Corp
File  35:Dissertation Abs Online 1861-2006/Jun
         (c) 2006 ProQuest Info&Learning
File  56:Computer and Information Systems Abstracts 1966-2006/Jul
         (c) 2006 CSA.
File  60:ANTE: Abstracts in New Tech & Engineer 1966-2006/Jul
         (c) 2006 CSA.
File  62:SPIN(R) 1975-2006/Apr W3
         (c) 2006 American Institute of Physics
File  65:Inside Conferences 1993-2006/Jul 24
         (c) 2006 BLDSC all rts. reserv.
File  94:JICST-EPlus 1985-2006/Apr W4
         (c)2006 Japan Science and Tech Corp(JST)
File  95:TEME-Technology & Management 1989-2006/Jul W4
         (c) 2006 FIZ TECHNIK
File  99:Wilson Appl. Sci & Tech Abs 1983-2006/Jun
         (c) 2006 The HW Wilson Co.
File 111:TGG Natl.Newspaper Index(SM) 1979-2006/Jul 12
         (c) 2006 The Gale Group
File 144:Pascal 1973-2006/Jul W1
         (c) 2006 INIST/CNRS
File 239:Mathsci 1940-2006/Sep
         (c) 2006 American Mathematical Society
File 256:TecInfoSource 82-2006/Oct
         (c) 2006 Info.Sources Inc
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
         (c) 2006 The Thomson Corp
File 583:Gale Group Globalbase(TM) 1986-2002/Dec 13
         (c) 2002 The Gale Group
```

5/3,K/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

05864304 INSPEC Abstract Number: C9503-6160D-004
Title: On the estimation of join result sizes
Author(s): Swami, A.; Schiefer, K.B.
Author Affiliation: IBM Almaden Res. Center, San Jose, CA, USA
p.287-300
Editor(s): Jarke, M.; Bubenko, J.; Jeffrey, K.
Publisher: Springer-Verlag, Berlin, Germany
Publication Date: 1994 Country of Publication: West Germany xi+406 pp.
ISBN: 3 540 57818 8
Conference Title: 4th International Conference on Extending Database Technology
Conference Date: 28-31 March 1994 Conference Location: Cambridge, UK
Language: English
Subfile: C

...Abstract: are determined for the join columns. The algorithm also takes into account the effect of **local predicates** on table and column cardinalities. These computations allow the correct selectivity values for each eligible **join predicate** to be computed. We show that the algorithm is correct and gives better estimates than...
...Identifiers: **local predicates** ; ...

...eligible **join predicate**

8/3,K/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

07613651 INSPEC Abstract Number: C2000-07-4250-012
Title: Optimization **and evaluation of disjunctive** queries
Author(s): Claussen, J.; Kemper, A.; Moerkotte, G.; Peithner, K.; Steinbrunn, M.
Author Affiliation: Passau Univ., Germany
Journal: IEEE Transactions on Knowledge and Data Engineering vol.12, no.2 p.238-60
Publisher: IEEE,
Publication Date: March-April 2000 Country of Publication: USA
CODEN: ITKEEH ISSN: 1041-4347
SICI: 1041-4347(200003/04)12:2L.238:OEDQ;1-M
Material Identity Number: N571-2000-003
U.S. Copyright Clearance Center Code: 1041-4347/2000/$10.00
Language: English
Subfile: C

Title: Optimization **and evaluation of disjunctive** queries
Abstract: It is striking that the **optimization** of disjunctive **queries** -i.e. those which contain at least one OR-connective in the query predicate-has...
... join operators that produce two output streams: the TRUE-stream with tuples satisfying the selection (**join**) **predicate** and the FALSE-stream with tuples not satisfying the corresponding predicate. Splitting the tuple streams...
Identifiers: disjunctive **query optimization** ;

8/3,K/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

07469318 INSPEC Abstract Number: C2000-02-4250-033
Title: Optimization **of** queries **with user-defined predicates**
Author(s): Chaudhuri, S.; Kyuseok Shim
Author Affiliation: Microsoft Res., Redmond, WA, USA
Journal: ACM Transactions on Database Systems vol.24, no.2 p. 177-228
Publisher: ACM,
Publication Date: June 1999 Country of Publication: USA
CODEN: ATDSD3 ISSN: 0362-5915
SICI: 0362-5915(199906)24:2L.177:OQWU;1-V
Material Identity Number: A316-2000-001
U.S. Copyright Clearance Center Code: 0362-5915/99/0600-0177$05.00
Language: English
Subfile: C

Title: Optimization **of** queries **with user-defined predicates**
...Abstract: early as possible is no longer a sound heuristic. There are two previous approaches for **optimizing** such **queries** . However, neither is able to guarantee the optimal plan over the desired execution space. We ...
... algorithm of choice. Our optimization algorithms handle user-defined selections as well as user-defined **join predicates** uniformly. We present complexity analysis and experimental comparison of the algorithms.
Identifiers: **query optimization** ; ...

... **join predicates** ;

8/3,K/3 (Item 3 from file: 2)
DIALOG(R)File 2:INSPEC

05999587 INSPEC Abstract Number: C9509-4250-003
Title: Hypergraph based reorderings of outer join queries with complex predicates
Author(s): Bhargava, G.; Goel, P.; Iyer, B.
Author Affiliation: Santa Teresa Lab., IBM Corp., San Jose, CA, USA
Journal: SIGMOD Record Conference Title: SIGMOD Rec. (USA) vol.24, no.2 p.304-15
Publication Date: June 1995 Country of Publication: USA
CODEN: SRECD8 ISSN: 0163-5808
Conference Title: 1995 ACM SIGMOD International Conference on Management of Data
Conference Sponsor: ACM
Conference Date: 22-25 May 1995 Conference Location: San Jose, CA, USA
Language: English
Subfile: C

...Abstract: are no usable results for reordering such operations for relations with duplicates and/or outer **join predicates** that are other than "simple". Most previous approaches have ignored duplicates and complex predicates; the...
... and algorithms for reordering such queries with joins and outer joins. As a result, the **query optimizer** can explore a significantly larger space of execution plans, and choose one with a low...
...Identifiers: **query optimizer** ;

8/3,K/4 (Item 4 from file: 2)
DIALOG(R)File 2:INSPEC

05864304 INSPEC Abstract Number: C9503-6160D-004
Title: On the estimation of join result sizes
Author(s): Swami, A.; Schiefer, K.B.
Author Affiliation: IBM Almaden Res. Center, San Jose, CA, USA
p.287-300
Editor(s): Jarke, M.; Bubenko, J.; Jeffrey, K.
Publisher: Springer-Verlag, Berlin, Germany
Publication Date: 1994 Country of Publication: West Germany xi+406 pp.
ISBN: 3 540 57818 8
Conference Title: 4th International Conference on Extending Database Technology
Conference Date: 28-31 March 1994 Conference Location: Cambridge, UK
Language: English
Subfile: C

Abstract: Good estimates of join result sizes are critical for **query optimization** in relational database management systems. We address the problem of incrementally obtaining accurate and consistent...
... on table and column cardinalities. These computations allow the correct selectivity values for each eligible **join predicate** to be computed. We show that the algorithm is correct and gives better estimates than...
...Identifiers: **query optimization** ; ...

...eligible **join predicate**

8/3,K/5 (Item 5 from file: 2)
DIALOG(R)File 2:INSPEC

05464152 INSPEC Abstract Number: C9310-6160D-001
Title: Predicate migration: optimizing queries **with expensive predicates**
Author(s): Hellerstein, J.M.; Stonebraker, M.
Author Affiliation: California Univ., Berkeley, CA, USA
Journal: SIGMOD Record vol.22, no.2 p.267-77
Publication Date: June 1993 Country of Publication: USA
CODEN: SRECD8 ISSN: 0163-5808
U.S. Copyright Clearance Center Code: 0 89791 592 5/93/0005/0267$1.50
Conference Title: SIGMOD '93. 1993 ACM SIGMOD. International Conference on Management of Data
Conference Sponsor: ACM
Conference Date: 26-28 May 1993 Conference Location: Washington, DC, USA
Language: English
Subfile: C

Title: Predicate migration: optimizing queries **with expensive predicates**
Abstract: The traditional focus of relational **query optimization** schemes has been on the choice of join methods and join orders. Today's extensible...

... to define time-consuming functions, which may be used in a query's restriction and **join predicates** . Furthermore, SQL has long supported subquery predicates, which may be arbitrarily time-consuming to check. Thus restrictions should not be considered zero-time operations, and the model of **query optimization** must be enhanced. The authors develop a theory for moving expensive predicates in a query...

... well as results of their implementation in POSTGRES. Their experience with the newly enhanced POSTGRES **query optimizer** demonstrates that correctly **optimizing queries** with expensive predicates often produces plans that are orders of magnitude faster than plans generated by a traditional **query optimizer** . The additional complexity of considering expensive predicates during optimization is found to be manageably small.
Identifiers: relational **query optimization** ;

8/3,K/6 (Item 6 from file: 2)
DIALOG(R)File 2:INSPEC

04554188 INSPEC Abstract Number: C90015078
Title: Automatic knowledge acquisition and maintenance for semantic query optimization
Author(s): Yu, C.T.; Sun, W.
Author Affiliation: Dept. of Electr. Eng. & Comput. Sci., Illinois Univ., Chicago, IL, USA
Journal: IEEE Transactions on Knowledge and Data Engineering vol.1, no.3 p.362-75
Publication Date: Sept. 1989 Country of Publication: USA
ISSN: 1041-4347
U.S. Copyright Clearance Center Code: 1041-4347/89/0900-0362$01.00
Language: English
Subfile: C

Title: Automatic knowledge acquisition and maintenance for semantic query optimization
...Abstract: using newly acquired knowledge together with given semantic knowledge, it is possible to make the **query** processor and/or **optimizer** more intelligent so that future **queries** can b processed more efficiently. The acquired knowledge is in the form of constraints. While... ... the restriction (selection) closure, i.e. all deductible restrictions, from a given set of restrictions, **join predicates** (as given in a query), and constraints is given.
...Identifiers: semantic **query optimization** ; ...

... **join predicates**

8/3,K/7 (Item 7 from file: 2)
DIALOG(R)File 2:INSPEC

02998414 INSPEC Abstract Number: C83010282
Title: Querying relational views of networks
Author(s): Rosenthal, A.; Reiner, D.
Author Affiliation: Sperry Res. Center, Sudbury, MA, USA
Conference Title: Proceedings of COMPSAC 82. IEEE Computer Society's Sixth International Computer Software & Applications Conference p.571-80
Publisher: IEEE, New York, NY, USA
Publication Date: 1982 Country of Publication: USA xix+689 pp.
U.S. Copyright Clearance Center Code: CH1810-1/82/0000/0571$00.75
Conference Date: 8-12 Nov. 1982 Conference Location: Chicago, IL, USA
Language: English
Subfile: C

...Abstract: SQL query against 'access relations' which are essentially Codasyl records. Set links are represented by **join predicates** . A slightly modified relational **query optimizer** is then used to produce an access strategy for the query.

8/3,K/8 (Item 1 from file: 6)
DIALOG(R)File 6:NTIS

1470968 NTIS Accession Number: N89-29079/5
Application of Constraints in Query Optimization
Vankuijk, H. J. A.
Technische Univ. Twente, Enschede (Netherlands). Dept. of Computer Science.
Corp. Source Codes: 090700004; U1294434
Sponsor: National Aeronautics and Space Administration, Washington, DC.
Report No.: MEMO-INF-88-55
1988 84p
Languages: English
Journal Announcement: GRAI9002; STAR2723
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NTIS Prices: PC A05/MF A01

Application of Constraints in Query Optimization
... to a number of existing and new problems encountered during the overall process of (semantic) **query optimization** in (distributed) database systems. Domain constraints, attribute constraints, and tuple constraints are applied to explicitly...

... The context of the theory presented is found in the knowledge-based approach to semantic **query optimization** in a distributed environment and the explicit representation of **query optimization** knowledge of various sources so that it can be managed (added, deleted, modified). Constraints are...

...knowledge (including the so-called if-then rules known from literature), to augment selection and **join predicate** formulas to arrive at more efficient schedules for these operations, to define and apply horizontal...
Descriptors: *Constraints; *Distributed processing; * **Optimization** ; * **Query languages** ; *Semantics; Communication theory; Computer systems design; Computer systems performance; Data base management systems; Operating...

8/3,K/9 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

06353688 E.I. No: EIP03157433795
Title: Efficiently processing method for a specific kind of join predicates **in ORDB**
Author: Yang, Guo-Gui; Wu, Quan-Yuan
Corporate Source: Coll. of Comp. Natl. Univ. of Defence Technol., Changsha 410073, China
Source: Tien Tzu Hsueh Pao/Acta Electronica Sinica v 28 n 11 November 2000. p 111-113
Publication Year: 2000
CODEN: TTHPAG ISSN: 0372-2112
Language: Chinese

Title: Efficiently processing method for a specific kind of join predicates **in ORDB**
...Abstract: the basic operations in relational and object relational databases. In the case of relational, the **join predicate** is a Boolean expression consisting of arithmetic comparisons, and there are many high performance processing...

...in the case of object relational, user defined functions (UDFs) can be involved in the **join predicate** , and the UDF likes black boxes for the optimizer and execution engines, so the algorithms...
Descriptors: *Relational database systems; Object oriented programming; **Query** languages; Boolean functions; Algorithms; **Optimization**
Identifiers: Object relational databases; **Join predicates** ; Boolean expressions; User defined functions; Transforming functions; Sort merge algorithms; Hash join algorithms

8/3,K/10 (Item 2 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

04202790 E.I. No: EIP95072769189
Title: Algebraic transformation framework for multidatabase queries
Author: Lim, Ee-Peng; Srivastava, Jaideep; Hwang, San-Yih
Corporate Source: Nanyang Technological Univ, Singapore
Source: Distributed and Parallel Databases v 3 n 3 Jul 1995. p 273-307
Publication Year: 1995
CODEN: DPADEH ISSN: 0926-8782
Language: English

...Abstract: to include two-way outerjoins and GAD operations. The framework demonstrates that properties of selection/ **join predicates** and attribute derivative functions can be used to provide interesting transformation alternative. This framework also serves as a formal ground for developing **optimization** strategies for multidatabase **queries** . 15 Refs.

8/3,K/11 (Item 3 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

01226670 E.I. Monthly No: EIM8207-009798
Title: OPTIMIZATION **STRATEGY FOR** QUERY **EVALUATION IN RDB/V1.**
Author: Makinouchi, A.; Tezuka, M.; Kitakami, H.; Adachi, S.
Corporate Source: Fujitsu Lab Ltd, Kawasaki, Jpn
Conference Title: Proceedings - Very Large Data Bases, 7th International Conference on Very Large Data Bases.
Conference Location: Cannes, Fr Conference Date: 19810909
E.I. Conference No.: 00204
Source: Very Large Data Bases, International Conference on Very Large Data Bases 7th. Publ by IEEE Comput Soc Press (n 371), Los Alamitos, Calif, USA. Also available from IEEE Serv Cent (Cat n 81CH1701-2), Piscataway, NJ, USA p 518-529
Publication Year: 1981
CODEN: VLDBDP
Language: English

Title: OPTIMIZATION **STRATEGY FOR** QUERY **EVALUATION IN RDB/V1.**
Identifiers: **OPTIMIZATION** STRATEGY; **QUERY** EVALUATION; RELATIONAL DATA BASES; DATA BASE MANAGEMENT SYSTEMS; END USERS; HEURISTICS; DATA ORGANIZATION; RESTRICTIVE PREDICATE; **JOIN PREDICATE** ; ACCESS PATH SELECTION; STATISTICAL DATA

8/3,K/12 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

01913474 JICST ACCESSION NUMBER: 94A0024172 FILE SEGMENT: JICST-E
Optimizing **Nested SQL** Queries .
SATO TAKASHI (1)
(1) Osaka Educational Univ.
Denshi Joho Tsushin Gakkai Gijutsu Kenkyu Hokoku(IEIC Technical Report (Institute of Electronics, Information and Communication Enginners), 1993, VOL.93,NO.340(DE93 46-54), PAGE.17-24, FIG.5, TBL.1, REF.2
JOURNAL NUMBER: S0532BBG
UNIVERSAL DECIMAL CLASSIFICATION: 681.3:061.68
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication

Optimizing **Nested SQL** Queries .
ABSTRACT: SQL is a database language standardized in the world. In the past, the **optimization** of nested **queries** described in SQL was proposed. And its revisited version appeared already. This paper is re ...

...results. Detail cost analysis shows that algorithm is much effcient especially when nested queries has **join predicate** other than equality. (author abst.)

19/3,K/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

08677901 INSPEC Abstract Number: C2003-08-6160-009
Title: Efficient processing of XPath queries using indexes
Author(s): **Chen, Y.** ; Madria, S.; Passi, K.; Bhowmick, S.
Author Affiliation: Dept. of Comput. Sci., Missouri Univ., Rolla, MO, USA
Conference Title: Database and Expert Systems Applications. 13th International Conference, DEXA 2002. Proceedings (Lecture Notes in Computer Science Vol.2453) p.721-30
Editor(s): Hameurlain, A.; Cicchetti, R.; Traunmuller, R.
Publisher: Springer-Verlag, Berlin, Germany
Publication Date: 2002 Country of Publication: Germany xviii+951 pp.
ISBN: 3 540 44126 3 Material Identity Number: XX-2002-02754
Conference Title: Database and Expert Systems Applications. 13th International Conference, DEXA 2002. Proceedings
Conference Date: 2-6 Sept. 2002 Conference Location: Aix-en-Provence, France
Language: English
Subfile: C

Author(s): **Chen, Y.** ; Madria, S.; Passi, K.; Bhowmick, S.
...Abstract: XML and semistructured data. All these query languages make use of regular path expressions to **query** XML data. To **optimize** the processing of **query** paths a number of indexing schemes have also been proposed. XPath provides the basis for...

19/3,K/3 (Item 3 from file: 2)
DIALOG(R)File 2:INSPEC

07240032 INSPEC Abstract Number: C1999-06-6160B-023
Title: On the query optimization **in multidatabases**
Author(s): **Chen, Y.** ; Benn, W.
Author Affiliation: Dept. of Comput. Sci, Chemnitz-Zwickau Tech. Univ., Chemnitz, Germany
Conference Title: Cooperative Databases and Applications. Proceedings of the International Symposium on Cooperative Database Systems for Advanced Applications p.84-91
Editor(s): Kambayashi, Y.; Yokota, K.
Publisher: World Scientific, Singapore
Publication Date: 1997 Country of Publication: Singapore xv+574 pp.
ISBN: 981 02 3161 X Material Identity Number: XX-1998-03303
Conference Title: Proceedings of the International Symposium on Cooperative Database Systems for Advanced Applications
Conference Date: 5-7 Dec. 1996 Conference Location: Kyoto, Japan
Language: English
Subfile: C

Title: On the query optimization **in multidatabases**
Author(s): **Chen, Y.** ; Benn, W.
Identifiers: **query optimization** ;

19/3,K/12 (Item 2 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

01737189 Genuine Article#: HW915 No. References: 22
Title: A PICTORIAL APPROACH TO POOR-QUALITY COST MANAGEMENT
Author(s): **CHEN YS** ; TANG K
Corporate Source: LOUISIANA STATE UNIV,DEPT QUANTITAT BUSINESS ANAL/BATON ROUGE//LA/70803
Journal: IEEE TRANSACTIONS ON ENGINEERING MANAGEMENT, 1992, V39, N2 (MAY) , P149-157
Language: ENGLISH Document Type: ARTICLE (Abstract Available)

Author(s): **CHEN YS** ; TANG K
Research Fronts: 90-1378 001 (RELATIONAL DATABASE; **QUERY OPTIMIZATION** ; NULL VALUES; COMPLEX OBJECTS)

04629669 INSIDE CONFERENCE ITEM ID: CN048383658
EnsMart-A query optimized **database and a genomic integration platform**
Kasprzyk, A.; Clamp, M.; Andrews, D.; **Chen, Y.** ; Clarke, L.; Cox, T.; Cuff, J.; Curwen, V.; Coates, G.; Cutts, T.
CONFERENCE: Genome informatics-Meeting
ABSTRACTS OF PAPERS PRESENTED AT THE MEETING ON GENOME INFORMATICS , 2003
P: 8
Cold Spring Harbor Laboratory, 2003
LANGUAGE: English DOCUMENT TYPE: Conference Abstracts and program
CONFERENCE SPONSOR: Cold Spring Harbor Laboratory
CONFERENCE LOCATION: Cold Spring Harbor, NY 2003; May (200305) (200305)

EnsMart-A query optimized **database and a genomic integration platform**
Kasprzyk, A.; Clamp, M.; Andrews, D.; **Chen, Y.** ; Clarke, L.; Cox, T.; Cuff, J.; Curwen, V.; Coates, G.; Cutts, T.

19/3,K/16 (Item 1 from file: 144)
DIALOG(R)File 144:Pascal

12944709 PASCAL No.: 97-0217478
Magic sets and stratified databases
CHEN Y
Technical Institute of Changsha, Hunan, China
Journal: International journal of intelligent systems, 1997, 12 (3) 203-231
Language: English

CHEN Y

English Descriptors: Stratification; **Optimization** ; **Query formulation** ; Labelling; Deductive database; Information processing; Time complexity

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Set     Items   Description
S1         20   JOIN()PREDICAT?
S2       5214   QUER??? ?(10N)OPTIMIZ?
S3       2486   UNION()ALL()VIEW??? ? OR UNIONALLVIEW? OR UNIONALL()VIEW???
                ? OR UNIONALL? OR UNION()ALL? ?
S4         32   LOCAL()PREDICAT?
S5         24   JOIN???()PREDICAT?
S6          0   (S1 OR S5)(100N)S3
S7          1   (S1 OR S5)(100N)S4
S8          4   S2(100N)S5
S9          0   S2(100N)S3
S10         0   S3(100N)S4
File   9:Business & Industry(R) Jul/1994-2006/Jul 24
         (c) 2006  The Gale Group
File  13:BAMP 2006/Jul W3
         (c) 2006  The Gale Group
File  15:ABI/Inform(R) 1971-2006/Jul 24
         (c) 2006 ProQuest Info&Learning
File  16:Gale Group PROMT(R) 1990-2006/Jul 24
         (c) 2006 The Gale Group
File  47:Gale Group Magazine DB(TM) 1959-2006/Jul 24
         (c) 2006 The Gale group
File  75:TGG Management Contents(R) 86-2006/Jul W3
         (c) 2006 The Gale Group
File  88:Gale Group Business A.R.T.S. 1976-2006/Jul 13
         (c) 2006 The Gale Group
File  98:General Sci Abs 1984-2005/Jan
         (c) 2006 The HW Wilson Co.
File 141:Readers Guide 1983-2006/Jun
         (c) 2006 The HW Wilson Co
File 148:Gale Group Trade & Industry DB 1976-2006/Jul 24
         (c)2006 The Gale Group
File 160:Gale Group PROMT(R) 1972-1989
         (c) 1999 The Gale Group
File 239:Mathsci 1940-2006/Sep
         (c) 2006 American Mathematical Society
File 275:Gale Group Computer DB(TM) 1983-2006/Jul 24
         (c) 2006 The Gale Group
File 369:New Scientist 1994-2006/Jul W1
         (c) 2006 Reed Business Information Ltd.
File 370:Science 1996-1999/Jul W3
         (c) 1999 AAAS
File 484:Periodical Abs Plustext 1986-2006/Jul W3
         (c) 2006 ProQuest
File 553:Wilson Bus. Abs. 1982-2006/Jul
         (c) 2006 The HW Wilson Co
File 621:Gale Group New Prod.Annou.(R) 1985-2006/Jul 24
         (c) 2006 The Gale Group
File 624:McGraw-Hill Publications 1985-2006/Jul 25
         (c) 2006 McGraw-Hill Co. Inc
File 634:San Jose Mercury  Jun 1985-2006/Jul 24
         (c) 2006 San Jose Mercury News
File 635:Business Dateline(R) 1985-2006/Jul 22
         (c) 2006 ProQuest Info&Learning
File 636:Gale Group Newsletter DB(TM) 1987-2006/Jul 24
         (c) 2006 The Gale Group
File 647:CMP  Computer Fulltext 1988-2006/Aug W3
         (c) 2006 CMP Media, LLC
File 674:Computer News Fulltext 1989-2006/Jul W3
         (c) 2006 IDG Communications
File 696:DIALOG Telecom. Newsletters 1995-2006/Jul 24
```

7/3,K/1 (Item 1 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)

02057104 SUPPLIER NUMBER: 19036817 (USE FORMAT 7 OR 9 FOR FULL TEXT)
DB2's outer join. (SQL enhancements in DB2 for MVS/ESA Version 4.1)(Product Announcement)
Favero, Willie
Enterprise Systems Journal, v11, n12, p42(42)
Dec, 1996
DOCUMENT TYPE: Product Announcement ISSN: 1053-6566 LANGUAGE: English RECORD TYPE: Fulltext; Abstract
WORD COUNT: 2791 LINE COUNT: 00240

... keyword is repeated, followed by the third table and another ON clause for each additional **join predicate** . Notice the improved readability in Example 5, a three-way outer join.

The ON clause does not preclude the use of the WHERE clause for specifying additional **local predicates** . Remember, though, that the join is always performed before applying the WHERE predicates.

There are...can be specified.

Nested table expressions can improve the readability of a complex join. Specifying **local predicates** within the nested table expression makes a three-or-more table join easier to debug. The **local predicates** for the table are declared where the table name is specified. The **join predicate** is specified for each table pair with the ON clause, again where the table name...

8/3,K/1 (Item 1 from file: 88)

05607812 SUPPLIER NUMBER: 67183803
Iterative Dynamic Programming: A New Class of Query Optimization Algorithms.
KOSSMANN, DONALD; STOCKER, KONRAD
ACM Transactions on Database Systems, 25, 1, 43
March, 2000
ISSN: 0362-5915 LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 16550 LINE COUNT: 01391

... shared join columns since such experiments are part of the standard repertoire to validate a **query optimizer** . Again, we will not show the results of these experiments here because they only confirmed...

...100 different settings for the cardinality of the base tables and the selectivity of the **join predicates** . These settings were made randomly following the approach proposed in Steinbrunn et al. (1997). Using...

8/3,K/2 (Item 2 from file: 88)

05446689 SUPPLIER NUMBER: 62793341
Optimization and Evaluation of Disjunctive Queries.
Claussen, Jens; Kemper, Alfons; Moerkotte, Guido; Peithner, Klaus; Steinbrunn, Michael
IEEE Transactions on Knowledge and Data Engineering, 12, 2, 238
March, 2000
ISSN: 1041-4347 LANGUAGE: English RECORD TYPE: Abstract

AUTHOR ABSTRACT: It is striking that the **optimization** of disjunctive **queries** --i.e., those which contain at least one or-connective in the query predicate--has...

...join operators that produce two output streams: the true-stream with tuples satisfying the selection (**join**) **predicate** and the false-stream with tuples not satisfying the corresponding predicate. Splitting the tuple streams...

8/3,K/3 (Item 3 from file: 88)
DIALOG(R)File 88:Gale Group Business A.R.T.S.

05291549 SUPPLIER NUMBER: 58224700
Optimization of Queries with User-Defined Predicates.
CHAUDHURI, SURAJIT; SHIM, KYUSEOK
ACM Transactions on Database Systems, 24, 2, 177
June, 1999
ISSN: 0362-5915 LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 21496 LINE COUNT: 01766

... execution plan very close to the optimal. This heuristic serves as an excellent alternative where **query** size or complexity of the optimization algorithm is a concern.

Our techniques provide optimization algorithms for queries containing user-defined selections as well join **predicates** . In the rest of this paper, we use the term user-defined predicate (or expensive...

...generically refer to any user-defined predicate whether it occurs as a selection or a **join predicate** . In contrast, we reserve the term " **join predicate** " to refer to traditional **join predicates** in **queries** .

We implemented the **optimization** algorithms by extending a System R style optimizer. We present worst-case complexity analysis and...
...traditional framework and the extensions needed to handle user-defined predicates (selections as well as **join predicates**) in **query optimization** . In Section 3, we review the System R **optimization** algorithm (Selinger et al. 1979), which is the basis of many commercial optimizers. Next, we describe the desired execution space and review past work on **optimizing queries** with user-defined predicates. Sections 4 and 5 present the two optimization algorithms that find...THEOREM 6.4 The total number of subplans that need to be stored by the **optimization** algorithm with complete rank ordering where a **query** has user-defined selection predicates but no user-defined **join predicates** is no more than (2.sup.n)((1 + w/2).sup.g).

PROOF. We store...

...most (1 + k/2)(2.sup.n). The next theorem presents the complexity of the **optimization** algorithm with complete rank ordering when a **query** has user-defined **join predicates** as well.

THEOREM 6.5 The total number of subplans that need to be stored by the **optimization** algorithm with complete rank-ordering where a **query** has both user-defined selections and **join predicates** is no more than (2.sup.n)((1 + w).sup.u).

PROOF. The proof is...

8/3,K/4 (Item 4 from file: 88)

05118561 SUPPLIER NUMBER: 54776361
Optimization Techniques for Queries with Expensive Methods.
HELLERSTEIN, JOSEPH M.
ACM Transactions on Database Systems, 23, 2, 113
June, 1998
ISSN: 0362-5915 LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 20197 LINE COUNT: 01648

... the following, we refer to a Boolean factor of the query's where clause. A **join predicate** is one that refers to multiple tables, and a selection predicate refers only to a single table.

2.1.1 Selectivity. Traditional **query optimizers** compute selectivities for both joins and selections. That is, for any predicate p (join or...

...et al. 1988; Haas et al. 1995). Accurate selectivity estimation is a difficult problem in **query optimization** , and has generated increasing interest in recent years.(1) In Illustra, selectivity estimation for user ...

...create function command (Illustra 1994). In this article we make the standard assumptions of most **query optimization** algorithms, namely, that estimates are accurate and predicates have independent selectivities.

2.1.2 Differential...

...system such as Illustra, arbitrary user-defined methods may be introduced into both selection and **join predicates** . These methods can be written in a general programming language such as C, or in...primary join predicates. Merge join, hash join, and index nested-loop join all have primary **join predicates** implicit in their processing. **Join predicates** that are not applicable in processing the join are merely used to select from its output, and we refer to these as secondary **join predicates** . Secondary **join predicates** are essentially no different from selection predicates, and we treat them as such. These predicates...

...pulled up above higher join nodes, just like selection predicates. Note, however, that a secondary **join predicate** must remain above its corresponding primary join. Otherwise the secondary **join predicate** would be impossible to evaluate.(3)

2.2 Optimal Plans for **Queries** with Expensive Predicates

At first glance, the task of correctly **optimizing queries** containing expensive predicates appears exceedingly complex. Traditional **query optimizers** already search a plan space that is exponential in the number of relations being joined...

...explore the issue of ordering selections among joins. Since we will eventually be applying our **optimization** to each plan produced by a typical join-enumerating **query optimizer** , our model here is that we are given a fixed join plan, and want to...

...the joins. This section develops a polynomial-time algorithm to optimally place selections and secondary **join predicates** in a given join plan. In Section 2.5 we show how to efficiently integrate...among joins appears in the next section.

Table III. Performance of Plans for Example 2

Query Plan	Optimization Time CPU	Elapsed
Without Pred. Mig.	0.10 sec	0.10 sec
With Pred. Mig...		

...section we presented the Predicate Migration Algorithm, an algorithm for optimally placing selection and secondary **join predicates** within a plan tree. If applied to every possible join plan for a query, the Predicate Migration Algorithm is guaranteed to generate a minimum-cost plan for the **query** .

A traditional **query optimizer** , however, does not enumerate all possible plans for a **query** ; it does some pruning of the plan space while enumerating plans (Selinger et al. 1979...

...join plan enumeration, it can significantly lower the amounts of space and time required to **optimize queries** with many joins. The pruning in a System R-style **optimizer** is done by a dynamic programming algorithm, which builds optimal plans in a bottom-up...primary join predicate constrained to precede all of S', or a selection or secondary join **predicate that** is unconstrained with respect to all of S'. Thus parallel ...

...as "interesting orders" (Selinger et al. 1979).

(8) In fact, the pioneering designs in query " **optimization** " **were** more accurately described by their authors as schemes for "query **decomposition** " (Wong and Youssefi 1976) and "access path selection" (Selinger et al. 1979).

(9) Note that...

...an appropriate approach from a practical standpoint, since it preserves the behavior of the optimizer **on** queries **without** expensive predicates.

(13) In this particular query **the** plan chosen by PullUp took almost 100 times as long as the optimal plan, although...

...poor performance happened because PullUp pulled the costly selection on T2 above the costly join **predicate** . **The** result of this was that the costly join **predicate had** to be evaluated on all tuples in the Cartesian product of T4 and the subtree...